



# HLA OBJECT MODEL TEMPLATE STATUS

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# ***BACKGROUND***

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**The formal definition of the HLA is comprised of:**

**HLA Rules - A set of rules which must be followed in development phase to achieve proper interaction of simulations in execution phase. These describe the responsibilities of simulations and of the runtime infrastructure (RTI) in HLA federations.**

**HLA Interface Specification - Definition of the interface functions between the RTI and simulations participating in HLA federations.**

**HLA Object Model Template - Common recordation format for HLA Object Models.**



## **OBJECT MODELS**

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**Object models provide an identification of the set of objects chosen to represent the “real world” for a specific application, including:**

- **Object characteristics (attributes)**
- **Static object relationships (class hierarchies, associations, aggregations)**
- **Dynamic object relationships (interactions)**
- **Individual object behavior**

**\*Note: HLA Object View does not imply or require object-oriented implementation means**



# ***HLA OBJECT MODELS***

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**Federation Object Model (FOM) - a specification of the exchange of public data among the participants in a HLA federation**

- **Object Classes**
- **Object Attributes**
- **Object Associations**
- **Object Interactions**



# **HLA OBJECT MODELS**

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**Simulation Object Model (SOM) - a specification of the capabilities offered to federations by individual simulations**

- Includes FOM characteristics, with (potentially) additional information
  - > Object behavior
  - > Key algorithms
- Must include “reflectable” objects/attributes/interactions, in addition to publishable



# **HLA OBJECT MODEL TEMPLATE**

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**The HLA OMT is a standardized presentation format for  
describing HLA object models**

## **Rationale:**

- Facilitates FOM development coordination**
- Provides a common means of describing potential federation members**
- Facilitates the design and development of common FOM development toolsets**



# **OMT COMPONENTS**

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- **Class Structure Table**
- **Component Structure Table**
- **Association Table**
- **Object Interaction Table**
- **Attribute Table**
- **Data Dictionary**



# ***OMT DEVELOPMENT STATUS***

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- **OMT V0.1 Release - July, 1995**
  - > Baseline framework for FOM construction during HLA prototyping effort
  - > Protofederation experiences captured by HLA Object Model Template Working Group (OMTWG)
- **OMT V0.2 Release - January, 1996**
  - > Incorporation of protofederation feedback
  - > FOM development process model
  - > OMT Use Case



## **NEXT STEPS**

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- **Resolve open technical issues in the following areas:**
  - > SOM
  - > Fidelity
  - > Data Dictionary
  - > Security
  - > Tools
- **Produce OMT V0.3**



# OMT ASSOCIATION TABLE

First Class	Association	Second Class
<class> [<number>]	<association>	<class> [<number.>]
<class> [<number>]	<association>	<class> [<number.>]
...	...	...
Mortar Platoon Commander 1+	reports to	Weapons Company Commander 1
Weapons Company Commander 1+	reports to	Infantry Battalion Commander 1
Air Vehicle 1+	is maintained by	Ground Crew 1
Air Vehicle 1+	flies from	Flight Ops Deck 1+



# OMT CLASS STRUCTURE TABLE

Class Structure			
<class>	<class>	<class>	[<class>] [,<class>]*   [<reference>]
		<class>	[<class>] [,<class>]*   [<reference>]
		...	...
		<class>	[<class>] [,<class>]*   [<reference>]
	<class>	<class>	[<class>] [,<class>]*   [<reference>]
		...	...
		<class>	[<class>] [,<class>]*   [<reference>]
		...	...
<class>	<class>	<class>	[<class>] [,<class>]*   [<reference>]
		<class>	[<class>] [,<class>]*   [<reference>]
		...	...
...	...	...	...
Air Vehicle	Fixed Wing	Fighter-Attack	F-14 F-16 F-18
		Bomber	B-1B B-2
	Rotary Wing		



# **OMT COMPONENT STRUCTURE TABLE**

Component Structure			
<class>	<class> [<number>]	<class> [<number>]	<class> [<number>]
		<class> [<number>]	
		...	
		<class> [<number>]	
		<class> [<number>]	<class> [<number>]
			...
		<class> [<number>]	
		...	
<class>	<class> [<number>]	<class> [<number>]	<class> [<number>]
		<class> [<number>]	
		...	
		<class> [<number>]	
...	...	...	...
Infantry Battalion	Weapons Company 1	Mortar Platoon 1+ Antiarmor Platoon 1+ HMG Platoon 1+ Company HQ 1	
	H + S Company 1		
	Rifle Company 3		



# OMT OBJECT INTERACTION TABLE

Interaction Structure		Initiating Object		Receiving Object/Area		Interaction Parameters
		Class	Affected Attributes	Class	Affected Attributes	
<Interaction>	[<Interaction>]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	[<parameter> [.,<parameter>]*]
		...	...	...	...	...
	[<Interaction>]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	[<parameter> [.,<parameter>]*]
		...	...	...	...	...
<Interaction>	[<Interaction>]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	<class> [.,<class>]*	[<attribute> [.,<attribute>]* [.,<comment>]*]	[<parameter> [.,<parameter>]*]
		...	...	...	...	...
Weapon Detonate	Weapon Detonate At Air Target	Weapon	Velocity Acceleration Weight : :	Air Vehicle	Velocity Acceleration Weight : :	Weapon Location, Warhead, Weapon Attitude : :
	Weapon Detonate At Ground Target	...	...	...	...	...



# OMT ATTRIBUTE TABLE

Object/ Interaction	Attribute/ Parameter	Data Type	Units	Resolution	Accuracy	Accuracy Condition	Update Type	Update Condition	Transfer- able
<class>	<attribute>l <parameter>	<datatype>	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate>	Yes/No
	<attribute>l <parameter>	<datatype>	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate>	Yes/No
	...	...	...	...	...	...	...	...	...
<class>	<attribute>l <parameter>	<datatype>	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate>	Yes/No
	<attribute>l <parameter>	<datatype>	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate>	Yes/No
	...	...	...	...	...	...	...	...	...
<class>	<attribute>l <parameter>	<datatype>	<units>	<resolution>	<accuracy>	<condition>	<type>	<rate>	Yes/No
	...	...	...	...	...	...	...	...	...
tank	area	float	meters	0.1 meter	0.1 meter	n/a	conditional	scen events	Yes
	velocity	double	m/sec	1 m/sec	1 m/sec	n/a	periodic	10HZ	Yes
	position	X-Y-pol	s	meters	1 meter	2 meter	DR#2	periodic	10Hz